

What is claimed is:

1. A method of converting a plurality of MPEG frames, each frame having a header and a payload, into a source word for channel encoding, the method comprising:
  - concatenating the payloads of the plurality of MPEG frames;
  - 5 generating a synchronizing word correlated to the concatenated payload; and
  - combining the concatenated payload and the generated synchronizing word to form the source word.
2. The method of claim 1, wherein the plurality of MPEG frames form an integer multiple number of MPEG superframes.
- 10 3. The method of claim 1, wherein the channel encoding is turbo encoding.
4. The method of claim 1, wherein the step of generating includes selecting a synchronizing word having a high degree of correlation to the concatenated payload.
5. The method of claim 4, wherein the step of selecting includes computing a parity check block using Reed-Solomon encoding.
- 15 6. The method of claim 4, wherein the step of selecting includes computing a parity check block using a cyclical redundancy code
7. The method of claim 1, wherein the step of generating includes selecting a synchronizing word in accordance with both the payload and characteristics of the channel encoding.
- 20 8. The method of claim 1, wherein the step of generating a synchronizing word includes selecting a synchronizing word having the same length as the length of a concatenation of the headers of the plurality of MPEG frames.
9. The method of claim 1, wherein the step of combining includes concatenating the synchronizing word and the concatenated payload.
- 25 10. The method of claim 9, wherein the synchronizing word is placed ahead of the concatenated payload.

11. The method of claim 9, wherein the synchronizing word is interleaved with the concatenated payload.

12. A method of converting a channel encoding source word, having both a payload and a synchronizing word, the synchronizing word used for at least one of channel decoding synchronization and error correction, into a plurality of MPEG frames, the method comprising:

dividing the source word into the synchronizing word and the payload, payload containing a plurality of MPEG frame payloads;

generating an MPEG header;

appending one of the plurality of MPEG frame payloads to the generated header; and

repeating the steps of generating and appending until each of the plurality of MPEG frame payloads has been appended to a header.

13. The method of claim 12, further including the step of correcting errors in the payload of the synchronizing word in accordance with error correction properties of the synchronizing word.

14. The method of claim 13, wherein the step of correcting includes at least one of performing a cyclical redundancy check in accordance with the synchronizing word and performing a Reed-Solomon decoding in accordance with the synchronizing word.

15. The method of claim 12, wherein the step of generating the MPEG frame header includes generating a header having a value of  $47_{\text{HEX}}$ .

16. The method of claim 12, wherein the plurality of MPEG frame payloads form the payload to an integer multiple number of MPEG superframes, and, wherein the step of generating the MPEG header includes generating a header having a value of  $47_{\text{HEX}}$  for any MPEG header corresponding to the header of an MPEG superframe.

17. A source word generator for converting a plurality of MPEG frames, each frame having a header and a payload, into a channel encoding source word, the generator comprising:

a frame formatter for receiving the plurality of MPEG frames from an MPEG source, and for concatenating the payloads of each of the plurality of MPEG frames;

a synchronizing word generator, for generating a synchronizing word in accordance with the concatenated payload; and

5 a combiner for receiving the concatenated payload from the frame formatter, and the synchronizing word from the synchronizing word generator, and for combining the concatenated payload and the synchronizing word to form the channel encoding source word.

10 18. The source word generator of claim 17, wherein the synchronizing word generator includes at least one of a Reed-Solomon encoder for generating a parity block for use as the synchronizing word and a cyclical redundancy check encoder for generating a parity block for use as the synchronizing word.

15 19. The source word generator of claim 17, wherein the combiner includes means to concatenate the concatenated payload and the synchronizing word to form the channel encoding source word.

20. An MPEG frame reassembler for converting a channel encoded source word, having both a concatenated payload and a synchronizing word, into a plurality of MPEG frames, the reassembler comprising:

20 a synchronizing word identifier for receiving the channel encoded source word and for dividing the received source word into the synchronizing word and the concatenated payload, the concatenated payload containing a plurality of MPEG frame payloads; and

a header generator for generating headers for MPEG frames and for prepending the generated headers to the each of the plurality of MPEG payloads to create a plurality of MPEG frames.

25 21. The reassembler of claim 20 further including an error corrector for correcting errors in the payload of the source word in accordance with error correction properties of the synchronizing word.

22. The reassembler of claim 20, wherein the header generator includes means identifying an MPEG superframe and for generating an MPEG superframe header for prepending to the first MPEG frame in the MPEG superframe.